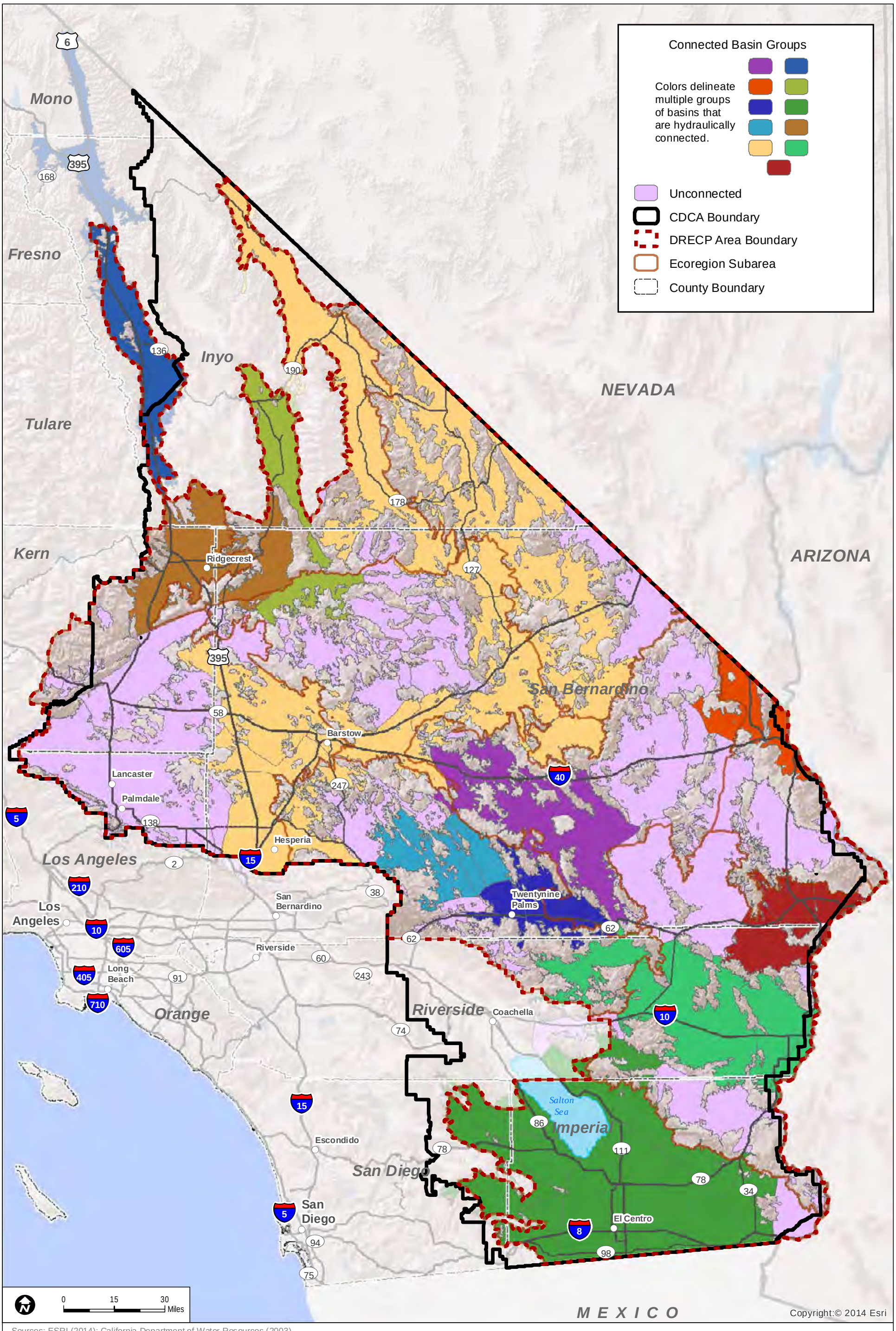

Sources: ESRI (2014); California Department of Water Resources (2003)

FIGURE III.6-9

Groundwater Basins with Evidence of Hydraulic Interconnection

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III.6.3.3.5 Consumptive Use

Irrigated Area

Water use in irrigated areas is one indicator of competition for groundwater. Where groundwater is used for irrigation, large areas of cropland indicate relatively heavy groundwater use. It also means that those users could be impacted by new future demands for additional groundwater. The current existence of large areas irrigated with groundwater does not necessarily mean that today's extraction rates are sustainable.

Figure III.6-10 shows cropland in the DRECP area. This figure shows that agriculture is predominantly in basins along the Colorado River, in Imperial Valley, along the Mojave River, and in Antelope Valley. All of these areas are supplied by imported surface water sources in addition to local groundwater. Some of these basins are adjudicated and administered through DWR's Watermasters Program. The inferred relatively large amount of water used in these basins does not necessarily imply either overdraft or, conversely, the long-term sustainability of current groundwater pumping. It rather illustrates the competition between water users. In adjudicated basins, Watermasters may require that new users acquire an existing right or allocation to access water.

Developed Area

Urban and rural land development other than agriculture also drives water demand. Water-dependent mining in the Bristol Lake area, as one example, extracts calcium and sodium chloride from a shallow aquifer. Large developed areas in a basin can also indicate strong competition among a large number of existing groundwater users for water yield. Developed lands in the DRECP area are shown in Figure III.6-11. The main developed areas, principally cropland, fall within many of the same basins but with slightly different proportions. The upper Mojave River Valley and portions of the Antelope Valley are highly developed areas, while the Imperial Valley and Colorado River floodplain areas are sparsely developed. Developed areas with little agriculture include the Morongo Valley–Yucca Valley–Twentynine Palms belt along Highway 62 in the central-west part of the DRECP area, and the Borrego Springs area in eastern San Diego County.

Water-Level Monitoring Wells

Similar to land use, the number and distribution of water-supply wells closely mirror groundwater use. Although water-level monitoring is not directly tied to the basin water balance, it does indicate that local stakeholders are attempting to quantify and manage groundwater.

Figure III.6-12 shows the locations of wells within the DRECP area that have measurements in the DWR Water Data Library. Most of these are water supply wells, and their spatial pattern closely matches the developed land pattern. (See Figure III.6-11.) Similar to land use factors, the number and distribution of these monitoring locations may indicate areas with existing groundwater users and a subsequent high competition for water.

Estimated Groundwater Use

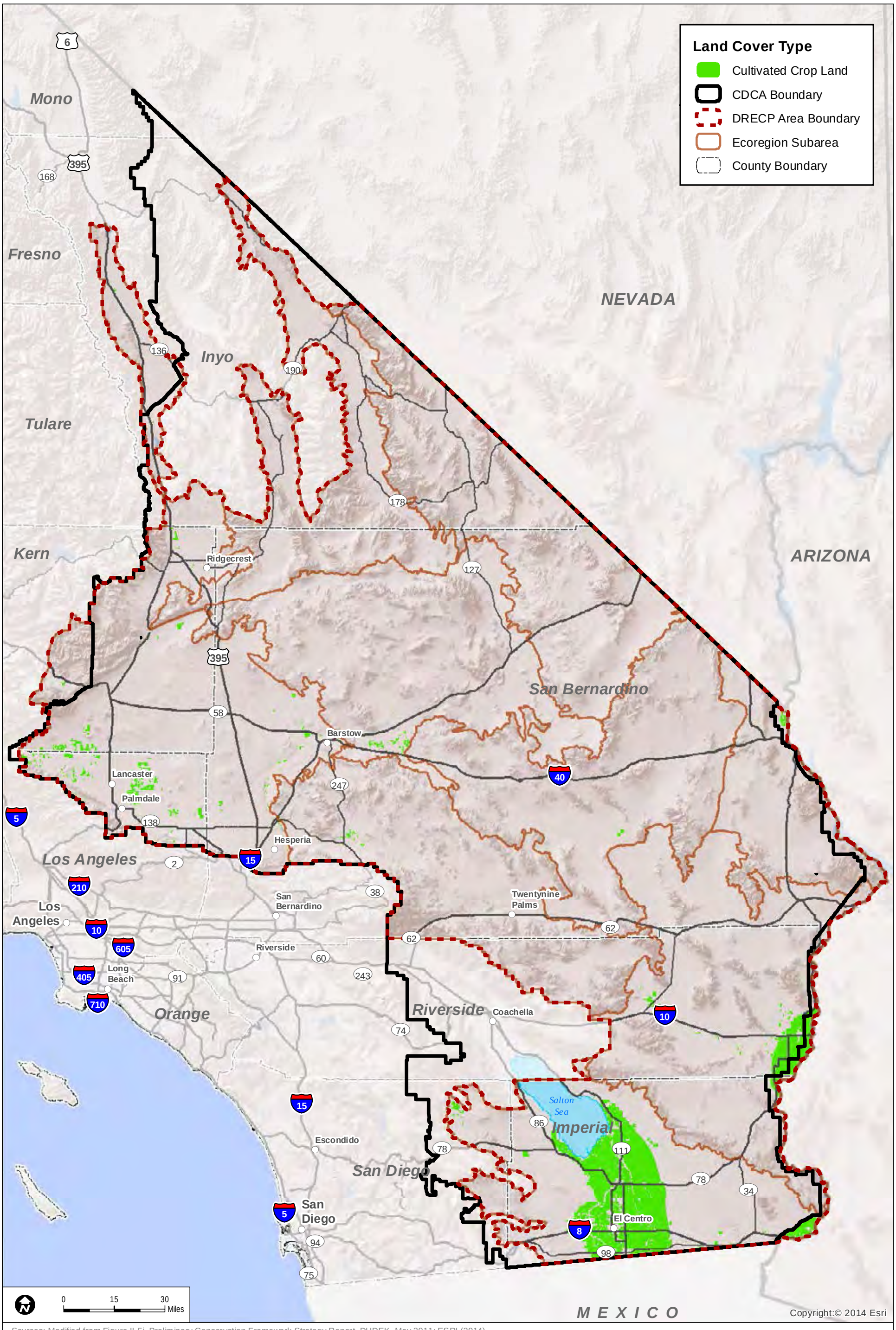
As part of the CASGEM Program legislation, DWR is required to prioritize California groundwater basins to identify, evaluate, and determine the need for both seasonal and long-term groundwater-level monitoring. Estimated groundwater use was one factor in the statewide groundwater volume information presented in the 2005 DWR Land and Water Use (LWU) survey data, which were compiled based on county boundaries and Detailed Analysis Unit areas. The CDWR region staff verified groundwater use, by basin, through aerial photography, local groundwater management plans, Bulletin 118 data, and other available information sources. However, detailed evaluations are required for project-specific assessments. For purposes of this regional assessment, DWR results provide approximate values representing general basin-by-basin trends within the DRECP area.

Figure III.6-13 shows groundwater use rate in the DRECP area, by basin. The highest-use rates are in western basin areas with substantial areas of disturbed lands (Figure III.6-11). The western basins also have a high density of wells with water-level data (Figure III.6-12), suggesting a greater level of groundwater development.

III.6.3.4 Subsidence

III.6.3.4.1 Water Supply Well Extractions

When groundwater is pumped from an aquifer, the fluid pressure in voids between the sediment grains decreases so that sediment beds can compact. The compaction of sediment beds causes lowering of the overlying land surface elevation ("land subsidence"). Measureable amounts of subsidence are typically associated with large water-level declines over a broad area. Subsidence is a potential risk in most or all of the DRECP area groundwater basins.



Sources: Modified from Figure II-5i, Preliminary Conservation Framework Strategy Report, DUDEK, May 2011; ESRI (2014)

FIGURE III.6-10

Cultivated Crop Land

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